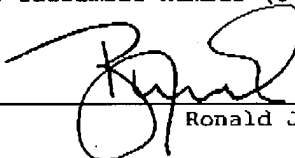


**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES**

Appl. No. : 10/600,571 Confirmation No. 9645
Applicant : Masao HORI et al.
Filed : June 23, 2003
TC/A.U. : 3748
Examiner : Tu Minh Nguyen
Dkt. No. : HARA-072-046
Cust. No. : 20374

I hereby certify that this paper is being
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Ronald J. Kubovcik

BRIEF ON APPEAL

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

March 1, 2010

Sir:

This is an appeal from the decision dated June 10, 2009, of
the primary Examiner finally rejecting claims 17-19, 21-25 and 29
of this application.

(i) REAL PARTY IN INTEREST

The real parties in interest are ICT Co., Ltd., Osaka, Japan,
and International Catalyst Technology, Incorporated, Ridgefield,

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New Jersey.

(ii) RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

(iii) STATUS OF CLAIMS

Claims 17-19, 21, 22, 24, 25 and 29 are pending in this application. Claims 1-16, 20, 23, 26-28 and 30-32 have been cancelled. Claims 17-19, 21, 22, 24, 25 and 29 are appealed. Claims 17-19, 21, 22, 24, 25 and 29 as finally rejected appear in the attached Appendix.

(iv) STATUS OF AMENDMENTS

An amendment was filed subsequent to the final rejection. In the amendment claim 17 was amended to include the limitations of claim 23 and claim 23 was canceled. In the Advisory Action mailed September 1, 2009, the Examiner indicated that for the purposes of appeal, the amendments to the claims would be entered and that claims 17-19, 21, 22, 24, 25 and 29 will be "objected to" [sic].

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(v) SUMMARY OF CLAIMED SUBJECT MATTER

Claim 17, the only independent claim in the present application, defines a process for purifying exhaust gas from a gasoline engine of a fuel-direct-injection type in which the exhaust gas varies between a first exhaust gas state and a second exhaust gas state that forms a more oxidizing, low-temperature atmosphere as compared with the first exhaust gas state in response to changes in the air-fuel ratio, depending on various operation conditions, using a single catalyst. (Specification, page 27, lines 6-14).

In the first exhaust gas state the air-fuel ratio is in the range of 13 to 15. (Specification, page 7, lines 6-7 from the bottom of the page). In the second exhaust gas state, the air-fuel ratio is more than 15 to 50. (Specification, page 7, lines 4-6 and 8-9 from the bottom of the page).

The exhaust-gas temperature of the first exhaust gas state is in the range of 350 to 800 °C at the inlet of the catalyst (specification, page 7, lines 10-12), and the exhaust-gas temperature of the second exhaust gas state is in the range of 200 to to 350 °C at the inlet of the catalyst (specification, page 7, lines 12-15).

The catalyst is an exhaust gas purifying catalyst containing

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a noble metal and a transition metal. (Specification, paragraph bridging pages 6 and 7). More particularly, the exhaust gas purifying catalyst is a catalyst obtained by mixing the noble metal and the transition metal with or carrying the noble metal and the transition metal by a fire-resistant inorganic oxide having a BET surface area of 50 m²/g to 200 m²/g (specification, page 10, lines 5-7 from the bottom of the page) and having a pore diameter of 10 nm to 30 nm (specification, page 8, lines 1-8), an amount of the noble metal being in a range of 0.01 g/liter to 50 g/liter with respect to catalyst volume (specification, page 9, lines 4-7 from the bottom of the page), the fire-resistant inorganic oxide being α -alumina, active alumina, titania, zirconia, or a composite oxide of α -alumina, active alumina, titania, and zirconia (specification, page 10, lines 11-18).

Prior to the present invention, it was generally believed that NO_x in an exhaust gas under a lean-burn condition cannot be purified with the use of a catalyst that is capable of purifying NO_x, CO and HC in an exhaust gas having an air-fuel ratio of 13 to 15 (i.e., a stoichiometrical air-fuel ratio). This is evidenced by the disclosure in Col. 1, lines 15-24, of the primary Katoh et al reference (US 5,402,641) relied on by the Examiner in the 35 U.S.C. § 103(a) rejection of the claims discussed below.

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(vi) GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 17-19, 21, 22, 24, 25 and 29 are unpatentable under 35 U.S.C. § 103(a) over Katoh et al., US 5,402,641 ("Katoh"), in view of Ozawa et al., US 5,075,276 ("Ozawa").

(vii) ARGUMENT

Katoh does not disclose a process for purifying exhaust gas from a gasoline engine of a fuel-direct-injection type in which the exhaust gas varies between a first exhaust gas state and a second exhaust gas state having specified air-fuel ratios and exhaust gas temperatures as defined in claim 17 using a single exhaust gas purifying catalyst and, more particularly, using the exhaust gas purifying catalyst defined in the claims on appeal.

Instead, Katoh is directed to a gas purification apparatus in which an NO_x absorbent installed in an engine exhaust conduit and that has been poisoned by SO_x is recovered by controlling an operation of an engine.

Katoh does not disclose that the gasoline engine of a fuel-direct-injection type for which the exhaust gas purification apparatus of its invention is provided is a gasoline engine of a fuel-direct-injection type.

Katoh does not set any conditions on the exhaust gas (i.e.,

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air-fuel ratio or exhaust gas temperature) during normal operation, and only requires setting conditions on the exhaust gas for recovering the NO_x absorbent when the absorbent deteriorates. These conditions are not the conditions specified in claim 17.

The NO_x absorbent of Katoh is not the gas purifying catalyst required by the claims of the present application.

The Examiner relies on Fig. 5 of Katoh as disclosing a process including each of the steps of the process of the present invention. The Examiner's position is that the conditions of the operation of the engine of Katoh as identified in Fig. 5 could, perhaps, under some unspecified circumstances, encompass the conditions of the steps recited in claim 17. However, prima facie obviousness of the process of the present invention under 35 U.S.C. § 103(a) requires that the Examiner show that a person of ordinary skill in the art would have had a reason or would have otherwise been motivated to control the engine of Katoh so as to specifically operate under conditions of both:

providing a mixture of air and gasoline having an air-fuel ratio of 13 to 15 and combusting the mixture to form an exhaust gas in a first exhaust gas state having an exhaust-gas temperature in a range of 350°C to 800°C at an inlet to the catalyst;

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and

providing a mixture of air and gasoline having an air-fuel ratio of more than 15 to 50 and combusting the mixture to form an exhaust gas in a second exhaust gas state having an exhaust-gas temperature in a range of 200°C to 350°C at the inlet to the catalyst;

as required by claim 17.

Also, contrary to the Examiner's position, Katoh does not disclose a step of providing a mixture of air and gasoline having an air-fuel ratio of more than 15 to 50, combusting the mixture to form an exhaust gas in a second exhaust gas state having an exhaust-gas temperature in a range of 200°C to 350°C, and contacting said exhaust gas with an exhaust gas purifying catalyst as required by claim 17.

Step 106 of Katoh includes A/F ratios of greater than 15, but an exhaust gas temperature within the range of 200°C to 350°C is nowhere disclosed or suggested in Katoh. The temperature of the exhaust gas with the answer "NO" in step 106 of Fig. 5 of Katoh is identified only as not ≥ 550 °C. Nothing in Katoh suggests that a person of ordinary skill in the art would have been motivated to control the engine of Katoh so as to:

{directly inject gasoline into the cylinder of the

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gasoline engine of a fuel-direct-injection type to) provide a mixture of air and gasoline having an air-fuel ratio of more than 15 to 50 and combusting the mixture to form an exhaust gas in a second exhaust gas state having an exhaust-gas temperature in a range of 200°C to 350°C at the inlet to the catalyst.

An exhaust gas obtained by combusting a lean air-fuel ratio and having a temperature of 200°C to 350°C is nowhere disclosed or suggested in Katoh.

The combination of Katoh and Ozawa also does not support the obviousness under 35 U.S.C. § 103(a) of modifying the NO_x absorbent of Katoh to obtain the exhaust gas purifying catalyst of the present invention.

The position of the Examiner in the Final Action is that it would have been obvious at the time the present invention was made "to have utilized the density range of platinum and the inorganic oxide taught by Ozawa et al. in the catalyst of Katoh et al., since the use thereof would have provided a catalyst having high efficiencies in removing HC, CO, and NO_x emissions in the exhaust gas." (Final Action, sentence bridging pages 4 and 5) (Emphasis appellants'). I.e., the Examiner's position is that it would have been obvious to replace the NO_x absorbent of Katoh with the

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catalyst for purification of exhaust gases of Ozawa.

However, the invention of Katoh is based on the use of an NOx absorbent. Replacing of the NOx absorbent with a catalyst for purification will destroy the invention on which Katoh is based. An NOx absorbent is not an exhaust gas purifying catalyst. An absorbent absorbs a specific material and emits a material identical to the original material. A catalyst acts on a material and converts the material into a material different from the original material. The Examiner has provided no evidence or reasoning to show that the proposed modification of the NOx absorbent of Katoh would not have destroyed the absorbent properties of the NOx absorbent. In fact, the Examiner characterizes the modified NOx absorbent as a catalyst - not an absorbent.

References cannot be combined where the proposed modification would have destroyed the invention on which one of the references is based. *Ex parte Hartmann*, 186 USPQ 366 (BdPatApp&Int 1974).

Therefore, the proposed modification of the NOx absorbent of Katoh is improper as a matter of law.

For the above reasons, the Examiner has not satisfied his burden of supporting a case of prima facie obviousness under 35 U.S.C. § 103(a) of the claims on appeal. Reversal of the final

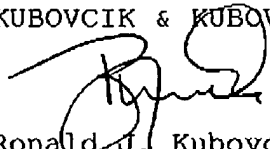
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rejection of the primary examiner is in order and is respectfully requested.

PTO-2038 in an amount of \$540.00 for the fee for this appeal brief is filed herewith. Please charge any additional required fees or credit any overpayment to Deposit Account No. 111833.

Respectfully submitted,

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(viii) CLAIMS APPENDIX

17. A process for purifying exhaust gas from a gasoline engine of a fuel-direct-injection type using an exhaust gas purifying catalyst containing a noble metal and a transition metal and which removes hydrocarbons, carbon monoxide and nitrogen oxides from the exhaust gas, comprising

providing the gasoline engine of the fuel-direct-injection type;

directly injecting gasoline into a cylinder of the gasoline engine of a fuel-direct-injection type to provide a mixture of air and gasoline having an air-fuel ratio of 13 to 15 and combusting the mixture to form an exhaust gas in a first exhaust gas state having an exhaust-gas temperature in a range of 350°C to 800°C at an inlet to the catalyst;

the catalyst being obtained by mixing the noble metal and the transition metal with or carrying the noble metal and the transition metal by a fire-resistant inorganic oxide having a BET surface area of 50 m²/g to 200 m²/g and having a pore diameter of 10 nm to 30 nm, an amount of the noble metal being in a range of 0.01 g/liter to 50 g/liter with respect to catalyst volume, the fire-resistant inorganic oxide being α -alumina, active alumina, titania, zirconia, or a composite oxide of α -alumina, active alumina, titania, and zirconia,

contacting the exhaust gas in the first exhaust gas state with

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the catalyst to remove hydrocarbons, carbon monoxide and nitrogen oxides from the first exhaust gas and purify the first exhaust gas;

directly injecting gasoline into the cylinder of the gasoline engine of a fuel-direct-injection type to provide a mixture of air and gasoline having an air-fuel ratio of more than 15 to 50 and combusting the mixture to form an exhaust gas in a second exhaust gas state having an exhaust-gas temperature in a range of 200°C to 350°C at the inlet to the catalyst;

and contacting the exhaust gas in the second exhaust gas state with the catalyst to remove hydrocarbons, carbon monoxide and nitrogen oxides from the second exhaust gas and purify the second exhaust gas.

18. The process for purifying exhaust gas from a gasoline engine as defined in claim 17, wherein:

the exhaust gas the second exhaust gas state forms a more oxidizing, low-temperature atmosphere as compared with the first exhaust gas state.

19. The process for purifying exhaust gas from a gasoline engine as defined in claim 17, wherein:

the first exhaust-gas state is a state at a time of high output of the gasoline engine of a fuel-direct-injection type, and the second exhaust-gas state is a state at a time of low output of the gasoline engine.

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21. The process for purifying exhaust gas from a gasoline engine as defined in claim 17, wherein:

the transition metal is at least one selected from the group consisting of manganese, iron, cobalt, copper and nickel.

22. The process for purifying exhaust gas from a gasoline engine as defined in claim 17, wherein:

the catalyst includes at least one noble metal selected from the group consisting of platinum, rhodium, palladium and iridium.

24. The process for purifying exhaust gas from a gasoline engine as defined in claim 17, wherein:

the catalyst includes platinum and rhodium as the noble metal.

25. The process for purifying exhaust gas from a gasoline engine as defined in claim 17, wherein:

the catalyst includes at least one of a cerium-oxide powder and a zirconium-oxide powder.

29. The process for purifying exhaust gas from a gasoline engine as defined in claim 17, wherein:

when the temperature of the exhaust gas at the inlet of the catalyst is higher than 500°C, the catalyst is unable to reduce NO_x contained in the exhaust gas that is in the second exhaust gas

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state.

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(ix) EVIDENCE APPENDIX

None

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(x) RELATED PROCEEDINGS APPENDIX

None

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